

**ARM Darwin Research Station  
Site Visit 0307D Report**

Visit Duration: 13 July to 25 July 2003

Darwin, Australia

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## **A. Introduction**

The main goals of the TWP Operations Site Visit 0307-D Visit to ARCS-3 at Darwin were the following: 1) Calibration of Instruments 2) Calibration of Instruments Training.

This report is organized according to the planned tasks or work units performed during the Site Visit. Within these work units the activities accomplished are arranged chronologically. Most of the information was put together by the Site Visit Team members based on the actual visit, daily reports.

## **B. TWP Operations Management and RESET Visits**

Site Visits are scheduled on approximately four-month intervals and are focused mainly on routine maintenance, instrument calibration, instrument replacement, and training. Sometimes non-routine visits are needed for technical tasks such as emergency repairs, retrofits, and/or the addition of new instruments. A formal audit-out is performed before departure.

The work on the Site Visit is performed by the Site Visit team, but often in close coordination with the local on-site Observers. The team holds a daily, morning tasking meeting at the site using the proposed Site Visit tasking schedule. After each day's work, the team meets to summarize work activities and an assigned team member writes a "Daily Report" and e-mails the report to TWP personnel in the U.S. Because of time-zone differences, necessary calls to instrument mentors in the U.S. are done in the morning.

### **Site Visit Members**

- Rex Pearson
- John Glowacki
- Troy Culgan
- Bill Porch
- Albert Mendoza

## C. Tasks Performed

### 1. Instrument Calibration

14 July:

All calibration equipment unpacked and it seems for now we have what we will need.

Troy set up for electronic calibration of the cal logger. He allows one day for the instruments to be turned on and settle down. I updated the procedure to reflect this.

Rex set me up to be able to download calibration data in the office. He asked for VPN so I can do email also.

15 July:

Set up computer to transferred raw data from the Skyrad, MPL and MFRSR to the TWPPPO ftp site.

16 July:

Electronic calibration completed for the cal logger. The cal logger has been installed on the comparison radiometer stand.

17 July:

Have revised calibration procedures for DAQC, DAQR, CEIL (Battery Replacement), CEIL (getting Config), MPL (getting Config), DAQM based on conversations with Troy, Rex and Albert.

18 July:

Made another correction to CEIL and WSI getting Config procedure.

Troy completed the electronic calibration of the SKYRAD logger with no problem. However, we are having problems getting the resistance values from the GNDRAD logger. We were able to get resistance values from the spare logger configured as a SKYRAD but not as a GNDRAD. The GNDRAD was taken apart and the expansion block of the logger had come loose. Also, the configuration had been messed up when the IRT values were changed. This did not affect the data, but did affect the real-time output. Troy worked these problems out and got a calibration record for the GNDRAD logger.

22 July:

Calibrated the anemometers, the T/RH, optical rain gauge and the IRT on the tower. This includes the SMET logger calibration.

23 July:

Completed IRT calibration for SKYRAD.

24 July:

Completed Ceilometer calibration and sent record to ftp site.

2. Radiometer Comparison testing

14 July:

John had mounting plates machined for the comparison radiometers.

15 July:

Rex and I set out radiometers for comparison, logged the serial numbers and cal coefficients and changed their desiccant in preparation for comparison set-up.

16 July:

Rex and Troy set out the first comparison radiometers on the comparison stand (minor problem with polarity sensitive ventilator fans and blown fuses). Comparison began about noon local time.

Sent Peter Gotseff configuration files and instrument deployment with serial numbers and calibration coefficients to make sure we are using the correct values.

17 July:

Troy wired optical fiber from the cal logger to the office to make downloading of comparison easier.

Troy set up cavity radiometer for NIP comparisons.

18 July:

Corrected mistake caused by switch the two comparison PSPs. All looks well. Having some problems with the cavity radiometer. Switched to 110 60 Hz from 110 50 Hz and improved the grounding this morning. Sent data to Peter Gotseff for comment.

19 July:

Completed cal records, downloaded new configurations, and sent results to ftp site.

Analyzed data for 18 July and sent results to Peter Gotseff along with the new set-up for the instruments with the sky and cal loggers.

20 July:

Completed comparisons for 19<sup>th</sup> and 20<sup>th</sup> and included MFRSR in the comparison for the 17<sup>th</sup> and 20<sup>th</sup>.

21 July:

Downloaded data from the Skyrad, Gndrad, cal loggers and the MFRSR for comparison on a clear day. Forgot to change the Gndrad configuration just after changing instruments at about 6:00 GMT made change at 9:30 GMT,

22 July:

Continued the comparison. The instrument that is the most out is the 8-48 that had been up on the tower for a year. Will send it back for recalibration. Worked with Rex, Troy, and John on how to improve the Rad comparison form so that steps are more intuitive and we will be less likely to forget to change the calibration coefficients.

23 July:

Cal Logger instruments packed up to send back to SGP.

3. Radiometer change out

18. July:

Switched PIRG1, PIRG1, and Nip1 on the Sky stand with PSP1c, PIR1c, and NIP1c on the comparison stand. Changed the SKY and Cal configurations and began taking data at about 17:30 LT.

21. July:

Switched PSPD and PIRD2 on Skyrad with PSP2c and PIR2c on the comparison stand. Also switched out PIRD and PSPD and put on the comparison stand. Details of serial numbers and cal coefficients are in cal record RAD030721.

23 July:

Comparison analyzed and sent of data from 22 July 23 July.

Comparisons complete.

4. Replace UVB (no spare UVB at Darwin)

5. Calibrate T/RH probe

22 July:

Comparison with handheld complete.

23 July:

Set up chilled-mirror comparison.

24 July:

Analyzed chilled-mirror comparison, results look good. Sent comparison file to ftp site.

6. Cal and Rad Logger Calibration

16 July:

Completed Cal Logger Calibration and send record to ftp site.

18 July:

Completed SKY and GND Logger calibration and sent records to ftp site.

19 July:  
Corrected Cal coefficient for NIPc1 and saved configuration.

21 July:  
Changed cal coefficients on the SKYRAD, Cal logger, and GNDRAD (after I forgot) saved and sent to ftp site.

24 July:  
Comparison is complete, older instruments packed for shipment to SGP.

7. SMET Logger Calibration

22 July:  
Completed SMET Logger Calibration.

8. Calibrate Barometer in SMET Logger

22 July:  
Completed Barometer Calibration.

9. Ship back equipment

24 July:  
Assembled equipment in two areas. One to go back to SGP for recalibration and the other to return to LANL.

10. Audit In – Completed

15 July:  
Sent Audit-in form to TWPPPO ftp site.

11. Audit out

25 July:  
Completed Audit-out and sent to ftp site.

12. Spares inventory

25 July:  
Completed with Audit out.

13. Config files from Rad Loggers, MFRSR, Ceil, MWR, etc.

16 July:  
Configuration files sent to ftp site for SKY, GND, CAL Loggers.

17 July:  
Configuration files sent to ftp site for Ceilometer and MWR

20 July:  
Configuration files sent to ftp site for the CAL, GND and SKY Logger.

21 July:  
Got logger new logger configurations and a configuration for the WSI and sent to ftp site.

22 July:  
Collected configuration file for SMET.

#### 14. Replacement records

17 July:  
Wrote a replacement record for the UVB replacement at Manus.

18 July:  
Corrected the previous replacement record for the UVB at Manus and wrote two more for Feb 9 and Feb 19 2003.

19 July:  
Completed three replacement forms for the PSG1, PIRG1, and NIP related to instrument switch that occurred on 18 July.

21 July:  
Completed replacement records for the PSPD, PIRD2 on the Skyrad and PSPD and PIRD on the Gndrad.